PORTLAND HARBOR ECOTEAM DATA NEEDS TABLE

Revised 10/19/05

Data Need	Justification	Data use	Additional comments	Methodology	priority
Tissue concentrations from epibenthic invertebrates (among infauna, epibenthic are mobile and live on sediment surface and can also be on structures)	Multiplates may not capture an adequate representation of invertebrates in sediment. Crayfish are not representative epibenthic species for sediment exposure. Need to better represent site-specific exposure	Estimates of tissue concentrations feed into Food Web Model and Dietary Approach (pathway), and as endpoints themselves	Could use *Lumbriculus* or other surrogate lab tests to assess epibenthic inverts. Uncertain whether the use of *Lumbriculus* as a surrogate is representative of contaminant uptake in epibenthos or would result in a conservative estimate.	in -vivo or in-situ testing	
Tissue concentrations for invertebrates exposed to surface water	Represent surface water exposure to inverts (on structure or water column)	Input to dietary exposure, FWM		more multiplates, zooplankton tows	
Localized estimate of exposure for source identification, assessing ecological risk, and to better represent BSAFs	Composite sampling of wider ranging species may lack sufficient spatial resolution for site specific evaluation	Site specific ERA, dietary and FWM, source identification	Identify where individual fish came from within existing composite samples and evaluate variability among samples. Evaluate crayfish data to determine if additional samples should be collected and decide where, if any, additional samples should be collected (crayfish may not be representative of contaminant uptake at the site). Discuss at integrated TCT meeting looking at SMAs; check in with HH on potential need for more crayfish data.	Caged and field collected clams, mussels, sculpin, crayfish (crayfish accumulation is variable, but are an important pathway for fish, birds), spmds, bioaccumulation testing	
Additional lines of evidence for PAH exposure and risk to all fish	Need to assess risk to fish from PAHs. Currently, detection limits not adequate to detect PAHs in tissue, and PAHs are metabolized by fish. High uncertainty of use of dietary approach to assess PAH risk to fish.	Need to determine resident fish exposure to PAHs; understand relationship between concentrations in sediment and water, and lesions in fish.	Jennifer, Rob, Brent, Jeremy will talk to Lyndal Johnson about how to assess the metabolites of PAHs in fish and how to evlauate risk using bile metabolite and skin or liver lesion endpoints.	fish bile florescent aromatic hydrocarbons (FACs) on different resident fish (bile is best integrater of bioavailable exposure of PAHs from different pathways); fish lesion and analysis	
Additional lines of evidence for metals exposure and risk to fish (all)	Tissue residues for metals do not correlate to risk; additional lines of evidence may include biomarkers, liver concentrations, and/or metallothionine	Improve risk characterization using paramerters based on relevant toxic pathways for metals		investigate liver and other sites or modes of action	

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Fish lesion data for eco-only fish	Need to understand relationship between sediment concentration and incidence of liver or skin lesions in fish. Need to know if there is enough frequency in lesions to pursue a true fish health assessment.		Need the data from LWG (explanation of what they did and when, clarification of areas of incompleteness, completeness) - Eric & Chip will follow-up. Review McCormick & Baxter data.		
Surrogate for juvenile salmon	Peamouth may not be adequate surrogate for juvenile chinook, compare diets to determine; to represent a more resident, nursery type exposure for juvenile chinook in ISA	Assess risk to rearing type juvenile chinook	Joe will answer this question in coordination with NOAA, determine what is an adequate surrogate, and what data needs flow from that. Let the Team know by end of October. Possibly peamouth could be a surrogate using salmon life history parameters.		
Colocated samples for sculpin and sediment	(1) collect more sculpin tissue to assess exposure to TZW, (2) may not have adequate spatial coverage of wildlife feeding areas, (3) to evaluate temporal variability, (4) assess certain sites to evaluate localized risk, (5) stratify sampling across range of contaminant levels to develop relationship between sediment and sculpin concentrations	Use in dietary exposure to wildlife receptors, source identification, monitor temporal trends in contaminant levels, and establish a more reliable BSAF.	Evaluate how sculpin use the habitat and what the most likely pathway would be to take up contaminants (e.g., TZW, sediment). Look at existing data and make decision on how well sculpin represent co-located sediment. Determine conditions under which we'll assess the sculpin-GW pathway (not everywhere)		
Tissue data collected during winter (high flow times)	we have no current tissue data to understand how concentrations may change during different times of year; winter vs. summer concentrations likely very different.	needed to assess risk over time and needed FWM (check with Bruce)	Need determine what type of tissue we're talking about (fish, benthic); what are our priorities? Seasonal surface water data and BCFs could work to predict seasonal changes in tissue concentrations, but better to get the tissue. This may not be a problem for some bioaccumulatives that have reached equilibrium.		
Site-specific data on potential risk to early life stages for all fish	Need site specific concentrations in early life stages such as in eggs and developing embryos	Assess reproductive effects of contaminant levels; compare to egg TRVs	Jennifer will TALK TO JEREMY about species of greatest concern, use as surrogate for all fish? Report back to team by October 28.	Fish egg contaminant levels; analyze fish eggs collected on multiplates to help assess reproduction, compare egg TRVs to surface water concentrations	

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Sturgeon/additional juvenile whole body tissue	No whole body juvenile sturgeon data; need portland harbor-specific field collected tissue to determine toxicity and bioaccumulation	Risk estimates for sturgeon	LWG assumes 100% presence and residence time for juveniles; may be able to use large scale sucker and/or pikeminnow as surrogate for juvenile sturgeon exposure.	whole body collection for harvestable sizes, correlate whole body concentrations with tissue plug concentrations, toxicology data (if can get or model it)	
Sturgeon/adult tissue data	need sturgeon tissue data on tissue concentrations across a range of body sizes to assess exposure and effects on longer lived fish	Risk estimates for sturgeon		tissue plugs, possibly modeling (no consensus yet)	
Sturgeon/adult presence and residence time	need to undertand whether the site is contributing to adult sturgeon contaminant levels	Risk estimates for sturgeon	If LWG assumes residence time of 100%, may not accurately represent percent of contaminant contribution from ISA.	tagging studies; potential extrapolation from other tagging studies	
Decide on our weighting heirarchy for different lines of evidence for different contaminant familes (metals, PAHs, PCBs, other organics)	some of the LWG lines of evidence are a little shaky (i.e., dietary)	focusing the risk assessment (beyond screening level) on relevant pathways of exposure and risk		internally decide on this, part of ERA approach	
Need to undertand variability and individual tissue concentrations for fish to reduce uncertainty in the FWM and understand what individuals and populations are exposed to	have limited composites for fish species; composites provide no information for variability around the mean, which is essential for understanding variability in effects; we may be underestimating population and individual effects by looking at mean concentrations	for FWM and understanding what populationsand individuals are exposesd to; for risk estimates for fish	Decide which species we'll use in FWM; Locations - in SMAs of interest, decide with CSM group; may do localized FWM in some areas	collect conentrations in individual fish for specific analytes at specific sites; sampling plan needs to assess the variability to determine when we have enough information, to improve confidence in the data	
Need a reasonable estimate of lamprey ammocoete tissue concentrations and rates of contaminant uptake; derive TRVs.	Toxicity information unavailable. Unlikely that a surrogate is availalbe due to physiological differences that would affect mechanism of action of contaminants and differences in life history. Tissue concentrations also needed for trophic transfer. Workplan calls for ammocoetes to be assessed at individual level.	Risk estimates for lamprey andFWM	Site collection of ammocoetes needed, with effective procedures and lamprey biologists (Stan-Siletz and Jenn-Warm Springs) involved. Eco Team also needs to decide what contaminants we're concerned about (assignment to subgroup by November 15, report back to team with proposal).	possible methods: in-situ study to determine rate of uptake, toxicity tests with site sediment, chemical specific toxicity tests, lab accumulation tests, modeling. Potential approach: do internal two-tiered assessment of lab studies (lab data collection) vs. BSAFs used at other sites (modeling).	

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Understanding adult lamprey tissue concentrations and variabilty in tissue concentrations.	Justificaiton is needed: Eco Team needs to come up with a natural history connection explaining the pathway between contaminants in the ISA and adult lamprey (review NRDA documents and produce an issue page of justificaiton and concerns).	Risk estimates for lamprey and in FWM to assess HH risk	Eco Team decided that adult tissue concentrations were relevant to HHRA; requst HH team consider adult lamprey analysis. Note: Tribes believe adult lamprey should be assessed as an ecological endpoint in ERA (potential area of disagreement among the team).	Analyze 70 adult lamprey samples collected by the Tribes, and/or do additional adult lamprey collection.	
Need to analyze osprey eggs to understand contaminant concentrations	Important for validating the food web model and performing endpoint analysis	validate the FWM and assess risk to osprey		Chuck Henny, USGS, has osprey eggs from ISA, needs $ to complete the egg evaluation and risk characterization relative to Portland Harbor ISA. Push to fund him to do the analysis, deliver/present a report to meet our objectives, and fit the data in a FWM ($15-20,000?).	
Need to collect bald eagle eggs to understand contaminant concentrations	Important for validating the food web model and performing endpoint analysis	validate the FWM and assess risk to eagles	Need to check to see if osprey data can be used as a possible surrogate for eagle egg data.	climb to the nests and collect eggs and/or shells from nests (two known nests occur outside the ISA but likely have eagles foraging within the ISA).	
bird tissue data, either from juveniles or their prey species	bird tissue data needed because eggs don't work for assessing risk to birds from metals; important for performing endpoint analysis		This data need is likely to come up at specific site locations (Arkema Early Action?)	Dietary ligature confirmation, which can be used for metals risk and organochlorines risk. Swallows are often used at PCB sites.	

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Lower bank data needed (below MHWM) to assess in-water exposure for invertebrates and fish, and potential data need to assess higher riparian area above MHWM.	Needed for endpoint analysis for sandpiper/kildeer, mink/otter, amphibians, plants, inverts and fish	assess risk to in-water receptors	Major gap in LWG's efforts between MHWM and MLWM, and below MLWM in some areas. Subgroup is generating definition of riparian area to map it and get a better sense of where to focus assessment/investigation in ISA; identify what areas we're concerned about; consider whether LWG or upland RPs are responsible for assessing these areas. May need a harborwide riparian area assessment, done either by LWG or uplands.		
Need to collect clams and larger, longer-lived mussels	To better characterize dietary uptake for invertivores (larger mussels for mink, otter and sturgeon) and BSAFs, especially at site specific locaitons. Also, data for longer lived filter feeding species could be helpful to correlate with lamprey (consider in upcoming lamprey discussions).	for FWM, to assess risk to invertivores, risk to shellfish, characterize BSAFs	Eco team internally needs to identify the species of larger mussels to be collected. Increase sampling numbers and robustness of existing clam data.		
potential data need for wapato	assessment of aquatic plants would also assess wapato in screening				
Potential need - to collect sediment/soil data near emergent plants of concern	Emergent plants are identified as endpoint assessment	assessing risk to emergent plants, and possibly use in FWM	Relates to Tribal interest in wapato. LWG is planning to use sediment data in screening level; haven't done it yet. We need to look at all sediment data, identify hot spots and areas where plants of concern could be. Parametrix is doing a screening level risk assessment for aqatic/emergent plants. Internally, we'll determine whether plants can be a risk driver for herbivores.		
Need to collect plant tissue for concentration analysis for in-water palnts (defined as periphyton and phytoplankton)	to provide dietary concentration information for receptors of concern and for use in FWM	Dietary risk analysis and FWM		net and tow collection, could assess through sediment exposure	

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Reptiles	Likely have limited use of ISA by only two or three reptiles (garter snake, painted and pond turtles). Have no surrogate species to evaluate reptiles.	Risk to turtles, FWM	Amphibian and bird data would be used to represent turtles (protecting sensitive life stages of amphibians and birds would be considered protective of turtles). Make sure that we're not calling amphibians or birds "surrogates" for reptiles.		